Sidewinder Key Bitting

★ 2025 Edition ★

This reference may be used as an aid when duplicating, decoding, and originating keys, as well as understanding master / valet functionality and diagnosing problems associated with worn or badly cut keys. Sidewinder keys may generally be decoded by sight if the general characteristics for the specific key type are understood.

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SIDEWINDER KEY TERMINOLOGY

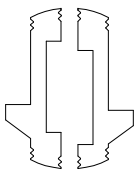
SIDEWINDER KEY - An automotive key of which the bitting is a wavy groove milled in the side of the blade. Note: Use of the term "Sidewinder" dates to the early 1980's when these locks were new to the automotive industry, but the term is a point of contention. Various sources may also use alternate terms such as Track Key, Laser Key or Side Mill Key.

LASER CUT - A method of key bitting that removes the steeples between adjacent cuts.

TRACK - The contiguous bitting surface of a sidewinder key.

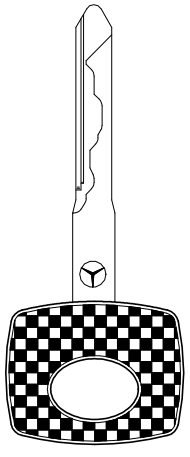
WEB - The center section of the blade remaining after cutting, expressed as a thickness dimension.

SPLIT WAFER - A wafer tumbler that does not completely surround the key blade, typically with two tumblers for each bitting position. This means each tumbler of a pair contacts alternate tracks of the same space position. ASP refers to these as Half Tumblers.

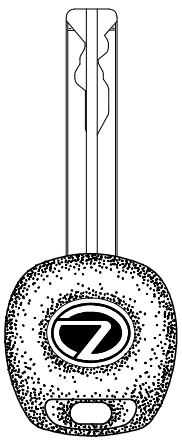


Split Wafers

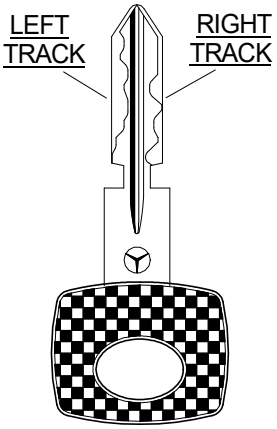
LEFT / RIGHT TRACK - Think of the track designation as the side it is always on with the key clamped in a key machine. Alternately, Instacode refers to these as axis A and axis B.



2-TRACK



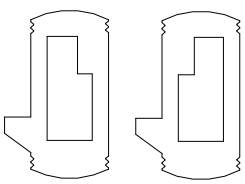
4-TRACK
INTERNAL CUT



4-TRACK
EXTERNAL CUT

RIGHT / LEFT FORMAT - Full wafers with the tumbler contact opposite the spring tab are most often considered Right format, and tumblers with the contact on the same side of the spring tab are Left format. This convention is found where tumblers are marked R or L by a few manufacturers, and is also in accordance with ASP designations.

Locks produced domestically by Strattec for Ford and GM use opposite designations from the above convention.



Right Left

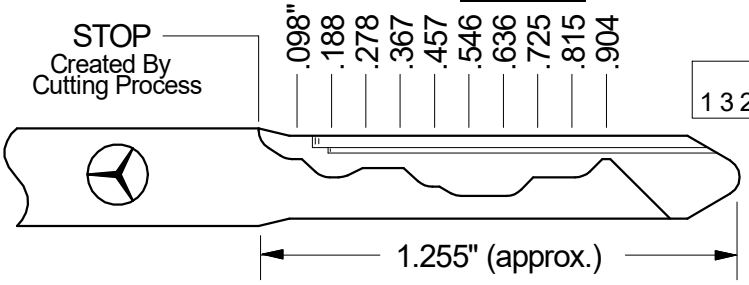
2004 - Greg N. Brandt, CML Rev. Mar '25

Sidewinder Key Bitting

2025 Edition

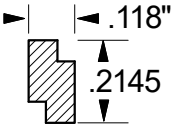
All early Mercedes 2-Track keys contain at least two #5 depth cuts. This rule does not apply to later keys and fob emergencykeys.

MERCEDES 2-Track 10-Cut LONG TIP - 1979 to 1993



EXAMPLE
1 3 2 2 4 5 5 3 3 1

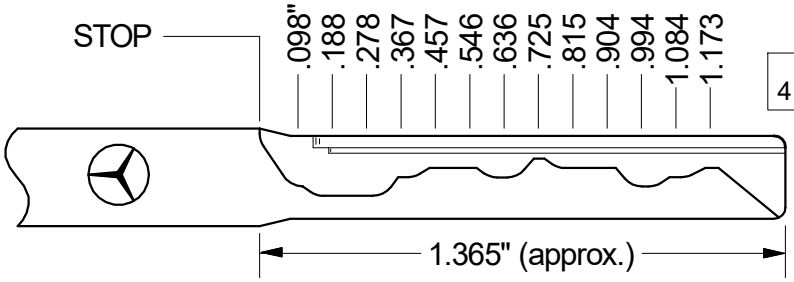
Master



Valet

DEPTHS
1 - .154"
2 - .130
3 - .106
4 - .083
5 - .059
Incr. - .0236
Web - .040
MACS - 2

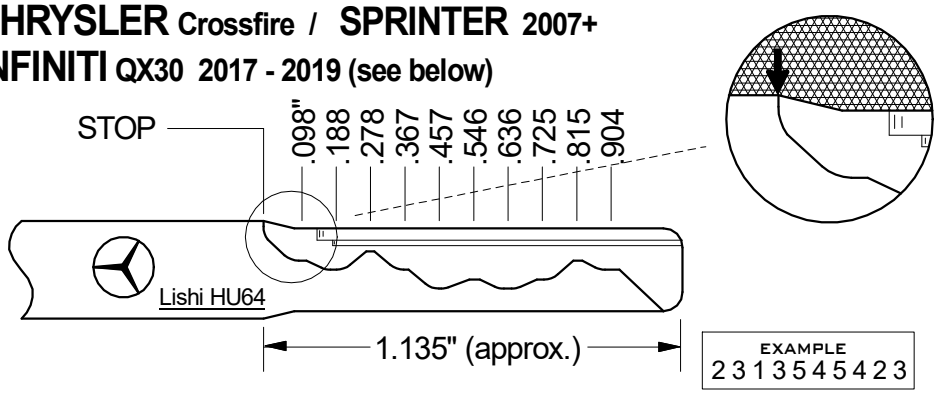
MERCEDES 2-Track 13-Cut Alarm Key 1984 - 1993



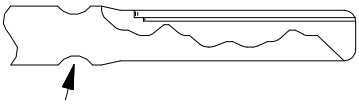
EXAMPLE
4 5 5 3 2 2 3 1 2 2 4 3 2

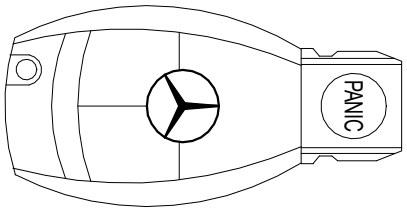
Most 2-Track keys form the stop by the cutting process. On all keys which have a widened neck such as this Mercedes, the stop should be at the point where the transition from wide to narrow begins. If the stop is formed closer to the tip, the integrity of the stop will be diminished.

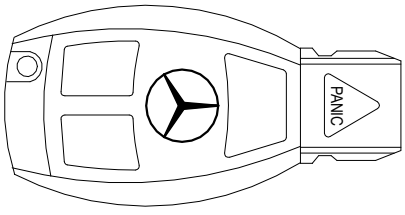
MERCEDES 2-Track 10-Cut SHORT TIP - 1994 +
CHRYSLER Crossfire / SPRINTER 2007+
INFINITI QX30 2017 - 2019 (see below)



EXAMPLE
2 3 1 3 5 4 5 4 2 3


Sprinter keys must have extra cut-outs to operate the ignition



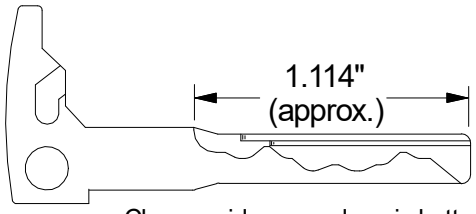


This format also used on the Infiniti QX30

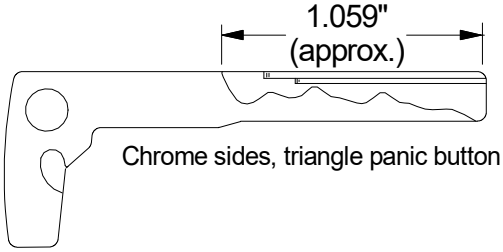
All Mercedes 2-Track keys have the same cut-to-cut and stop-to-cut dimensions. Though these are not a tip stop key, the tip is the reference for cutting.

The two illustrated fobs each contain respective emergency keys that have shorter lengths from the stop to the tip. Keep in mind this dimension does not need to be exact. You can shim the tip back from the stop of your machine to achieve optimal cutting if desired.

The earlier fobs without the chrome sides are cut to the standard short dimension as shown above.



Chrome sides, round panic button



Chrome sides, triangle panic button

2004 - Greg N. Brandt, CML Rev. Mar '25

Sidewinder Key Bitting

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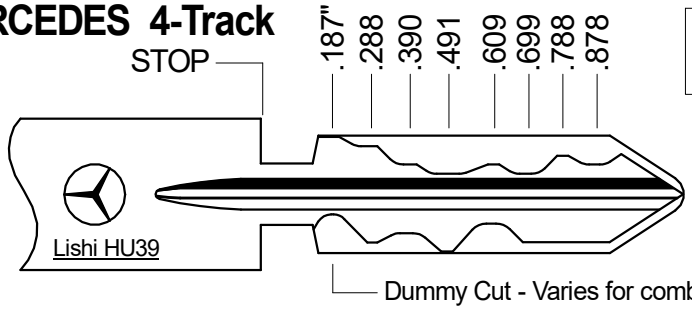
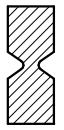
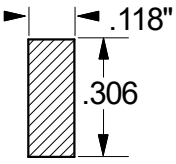
MERCEDES 4-Track



EXAMPLE
1 2 4 5 4 5 3 4
5 2 3 1 4 2 2 2



Master



Valet

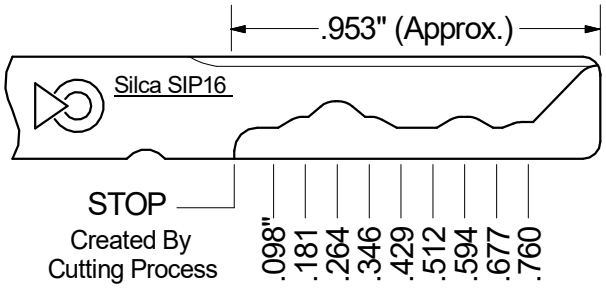
DEPTHS
1 - .301"
2 - .277
3 - .253
4 - .229
5 - .205
Web - .040
Incr. - .0236
MACS - See Text

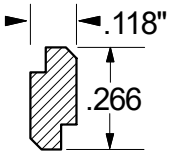
The first position will have only one active cut which may be either on the left or right track depending on the combination. The active cut will always be depth #1 thru #4. The opposing cut will always be a dummy #5 depth. The EXCEPTION to this rule is for certain late '90's SL models which use an ignition lock design containg no split tumblers. #1 depths are not used in positions 5 thru 8. Note the spacing varies which in essence groups the tumblers (positions 1 - 4 and postions 5 - 8). This spacing results in a MACS of 2, except between positions 4 and 5 of which the MACS is 3. MACS does not apply to the dummy cut.

MASERATI 2002 - 2007

Coupe / Spyder / Gran Sport

★ Code Series:
LA0001 - 11735

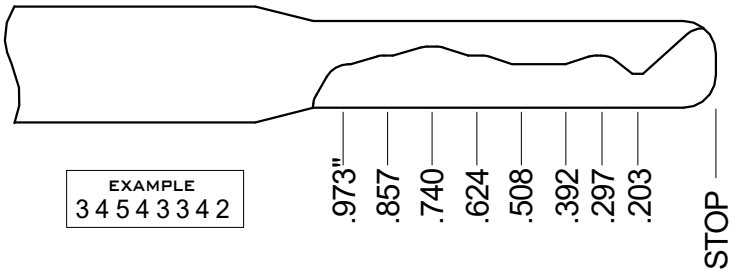




EXAMPLE
1 3 6 3 1 3 1 1 2

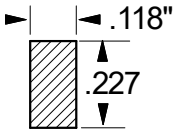
DEPTHS
1 - .185"
2 - .171
3 - .157
4 - .144
5 - .130
6 - .116
7 - .102
Incr. - .0138
Web - .040
MACS - 3

KTM Motorcycle



EXAMPLE
3 4 5 4 3 3 4 2

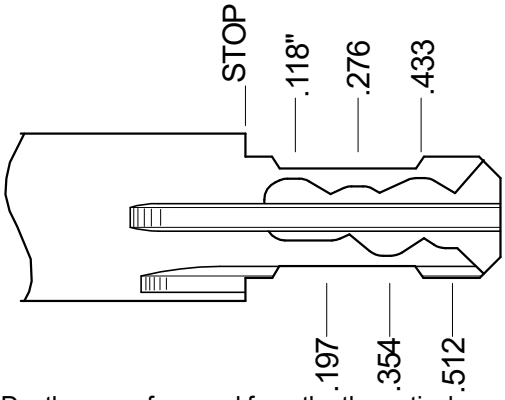
★ Code Series:
T0001 - T3001



Notice the cut-to-cut spacing is closer for the tip three positions!

DEPTHS
1 - .159"
2 - .136
3 - .114
4 - .091
5 - .068
Incr. - .0226
Web - .040
MACS - 2

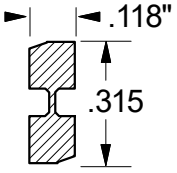
TRIMARK Winnebego



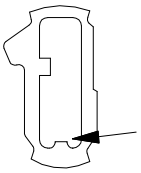
Depths are referenced from the theoretical edge, disregarding the narrowed center.

★ Code Series:
6000 - 6500

EXAMPLE
4 3 4
2 4 3



These locks have a removable core. The removal key uses a longer key blade to engage a retainer. The retainer can also be retracted using a pick in the unlocked position.



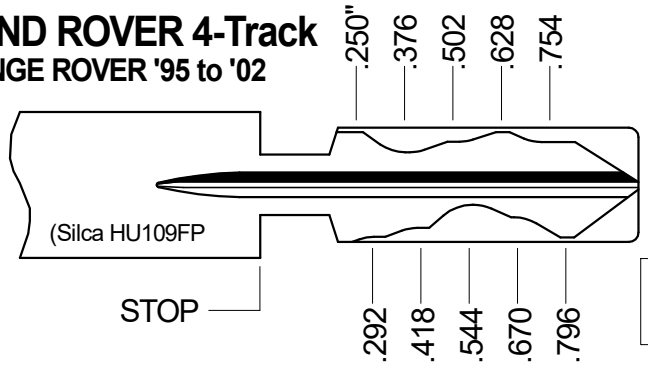
The narrowed center is a feature of the system by which these are master keyed in consideration of the core removal key. Some tumblers have a secondary protrusion that contacts the edge of a key that has a different edge contour (the master / removal key) thus aligning different depths to the shear line.

DEPTHS
1 - .118"
2 - .098
3 - .078
4 - .059
Incr. - .0197
Web - .047
MACS - None

Sidewinder Key Bitting

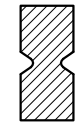
2025 Edition

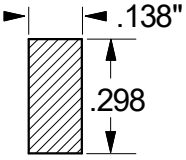
LAND ROVER 4-Track
RANGE ROVER '95 to '02



★ Code Series:
0001 - 6000

EXAMPLE
1 3 2 1 2
1 2 4 3 1

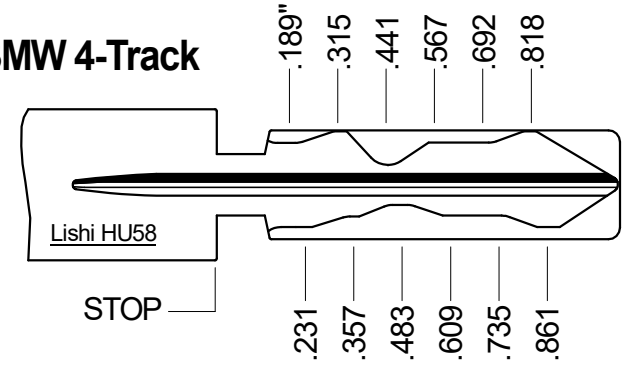

Master



Valet

DEPTHS
1 - .285"
2 - .261
3 - .234
4 - .202
Web - .040
MACS - None
Variable Increment!
(.6, .7, .8 mm)

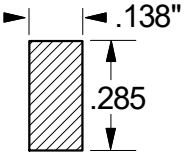
BMW 4-Track



★ Code Series:
BH010001 - BH241450

EXAMPLE
2 1 4 2 2 1
2 3 4 3 3 2

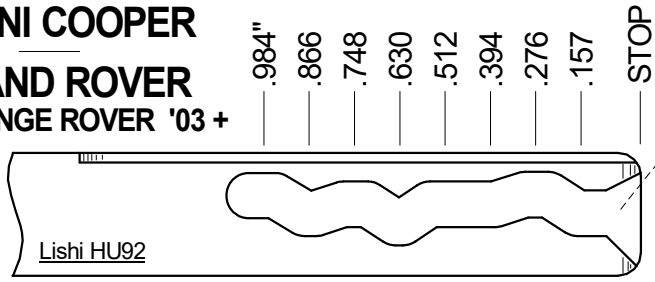
Master



Valet

DEPTHS
1 - .276"
2 - .253
3 - .225
4 - .194
Web - .040
MACS - None
Variable Increment!
(.6, .7, .8 mm)

BMW 2-Track
MINI COOPER
LAND ROVER
RANGE ROVER '03 +

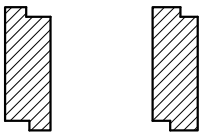


Tumblers contact the right track only

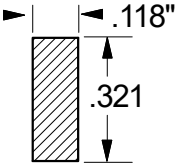
EXAMPLE
1 3 2 4 2 2 1 3

Uniform Width Groove
.118" (3mm)

★ Code Series:
HBA0001 - HBA6000


Master Valet

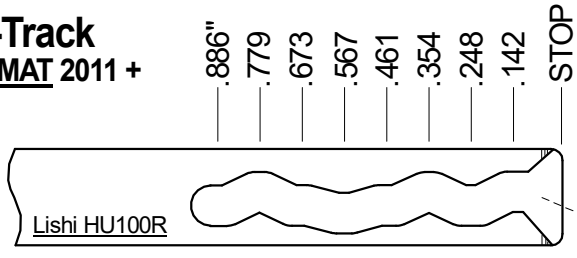
BMW - Rover



Mini Cooper

DEPTHS
1 - .150"
2 - .126
3 - .103
4 - .079
Incr. - .0236
Web - .025
MACS - 2

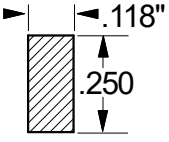
BMW 2-Track
NEW FORMAT 2011 +



Tumblers contact the left track only

★ Code Series:
Z0001 - Z6000 ?

EXAMPLE
2 4 2 1 2 4 2 4



Uniform Width Groove
.105"

DEPTHS
1 - .113"
2 - .093
3 - .074
4 - .054
Incr. - .0197
Web - .025
MACS - None

The BMW HU100R key is the reverse format of the common GM HU100 key. This means the bitting is referenced from the left track, instead of the right track. Like the GM codes, this is also a "Z" prefix, but the bittings are not the same as the GM "Z" code series. Codes are not published as of this printing, and the full code range is not certain.

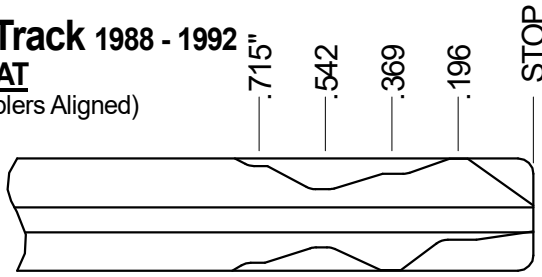
Sidewinder Key Bitting

2025 Edition

VOLVO 4-Track 1988 - 1992

OLD FORMAT

(Opposing Tumblers Aligned)



EXAMPLE
2 5 3 1
2 4 1 5

★ Code Series:
0AAAA - 9XXXX

Note: The tumblers in the '88 - '92 locks are diecast zinc alloy.

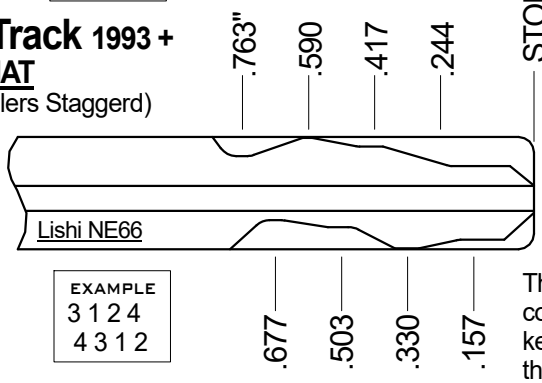
Master Valet

DEPTHS
1 - .292"
2 - .272
3 - .253
4 - .233
5 - .214
Incr. - 0197
Web - .040
MACS - None

VOLVO 4-Track 1993 +

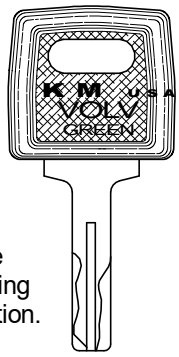
NEW FORMAT

(Opposing Tumblers Staggerd)



EXAMPLE
3 1 2 4
4 3 1 2

★ Code Series:
1V00000 - 5V12295

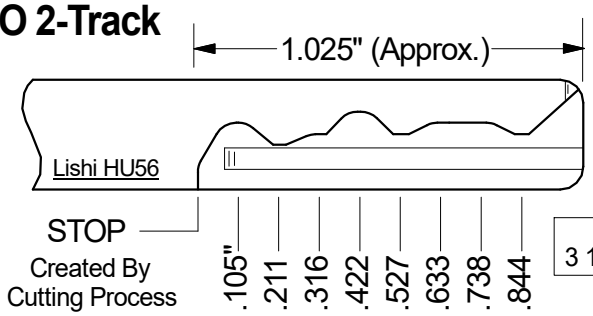


The "VOLV" key is used on construction equipment. The keys are all cut the same using the OLD FORMAT specification.

Left Track - 1545
Right Track - 4231

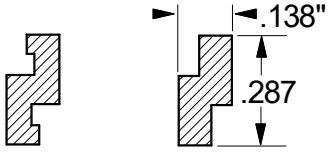
DEPTHS
1 - .292"
2 - .267
3 - .241
4 - .216
Incr. .0256
Web - .040
MACS - None

VOLVO 2-Track



EXAMPLE
3 1 2 4 2 3 3 2

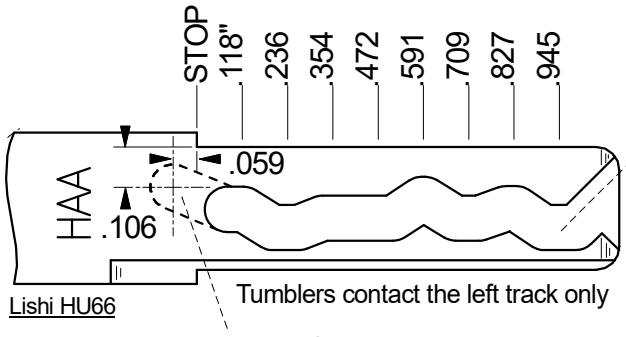
★ Code Series:
DH0001 - DH4000



Master Valet

DEPTHS
1 - .170"
2 - .141
3 - .112
4 - .083
Incr. - .0291
Web .040
MACS - 2

VOLKSWAGEN / AUDI / PORSCHE



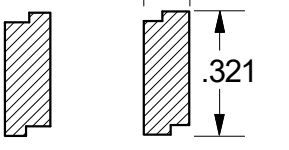
Tumblers contact the left track only

EXTENDED CUT

This is found on certain vehicles which use the transponder to validate an electro-mechanical ignition lock. The cut root is in the same location for all keys and interacts with with an element to retain the key in the lock.

Uniform Width Groove
.118" (3mm)

EXAMPLE
3 1 2 2 4 2 3 1



Master Valet

These stop using the tip in some compartment locks

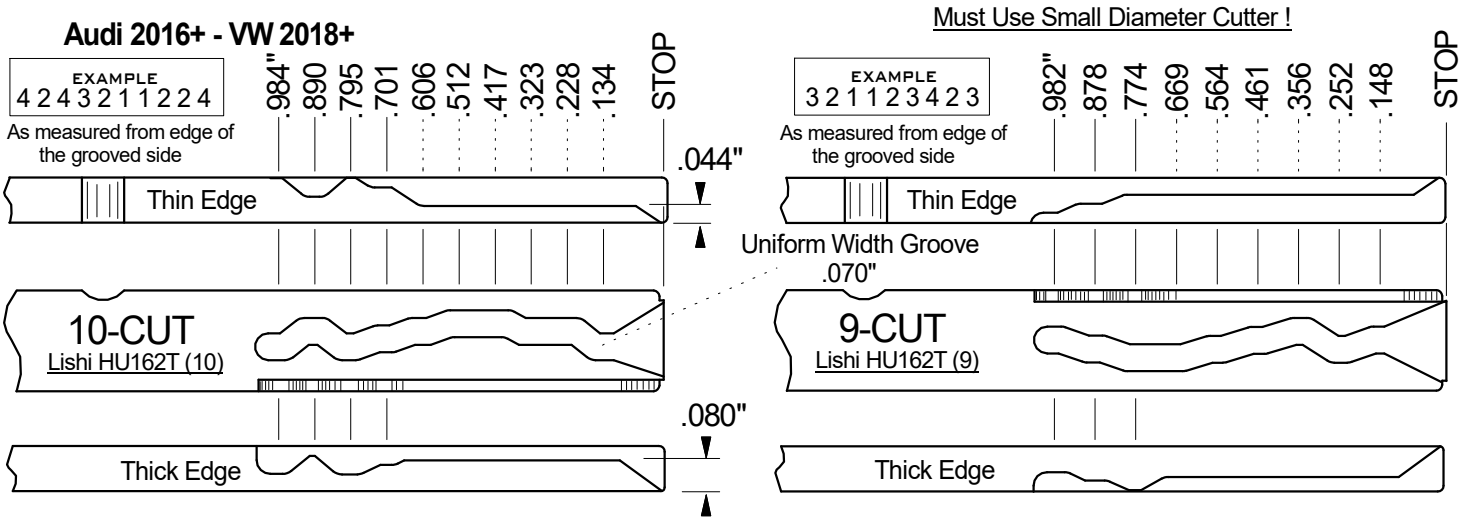
★ Code Series:
HAA 0001 - 8110
NAA 0001 - 8110 (Designates valet key)

DEPTHS
1 - .150"
2 - .126
3 - .103
4 - .079
Incr. - .0236
Web - .025
MACS - 2

Sidewinder Key Bitting

2025 Edition

VW / AUDI / PORSCHE Transverse Sidewinder



The 10-cut version uses 4 edge tumblers and 6 side tumblers. The 9-cut version uses 3 edge tumblers and 6 side tumblers. There appears to be a transition to using these new keys, with the 10-cut dedicated for Audi and the 9-cut for VW. They are more commonly used as emergency keys for prox equipped cars.

The keyways of the 9-cut and 10-cut locks are reverse of each other. Depths of cut are the same for both types, but spacing is different. The edge tumblers are biased 90 degrees from the side tumblers. Tumblers may contact either track, with no distinct pattern of contact known for left and right.

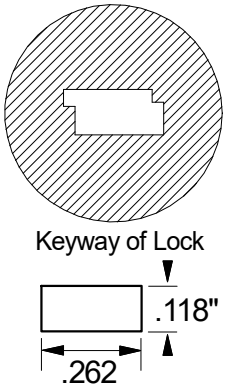
There are no codes published at this time, but there is reason to believe the 10-cut key uses the series xxHAxxx and the 9-cut key series to be xxCAxxx, where x's are numbers. This reference presents side bitting depths as measured from the grooved edge, with a #1 being farthest from that edge. Edge bitting depths are established here with the #1 as shallow.

The side bitting uses 5 depths (except in positions aligned with the edge cuts) and is the same on both sides, but these keys are not reversible when used in door locks. They will only enter the plug partially if inserted the wrong way due to the warding cooperating with the thick and thin edges as illustrated. Thick and Thin are descriptors for the leading surface created by bitting the edge cuts. The side bitting extends the full 9/10 positions, but only the tip 6 cuts engage side tumblers in door locks. It is believed that edge tumblers are only used in door locks.

The edge bitting only uses 4 depths. The bitting for the thick and thin edges has an inverse relationship. An edge cut will be 5 minus the opposing edge cut for that position. As an example, with the 10-cut key illustrated, the edge bitting for the thick edge is 4 2 4 3, thus the thin edge is 1 3 1 2. This creates the same effect as a uniform width groove key by not allowing any free play movement when the edge tumblers are in contact. This also means that improperly contoured edge bittings will prevent insertion of a key in the door.

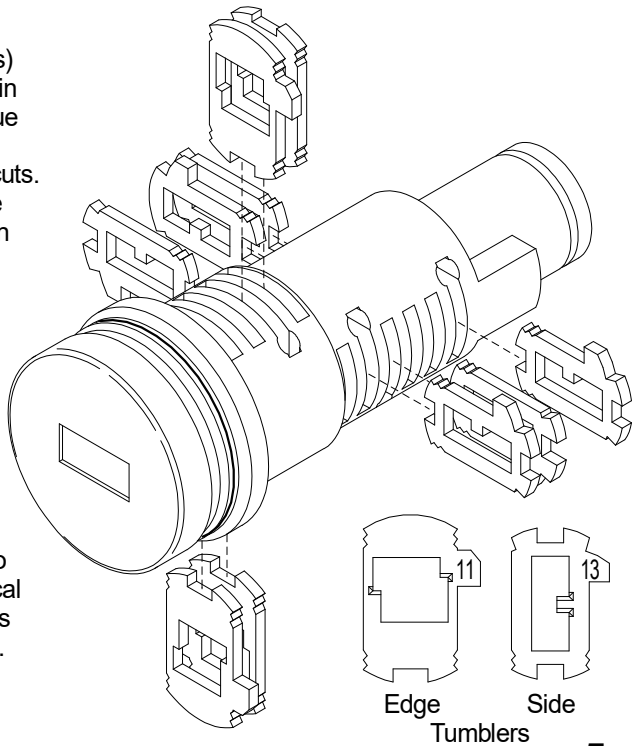
Edge cut depths correspond to the side bitting for each position. According to the depth scheme presented above, the 10-cut key uses edge depths identical to the first 4 positions of the side bitting on the thick edge. The 9-cut key uses edge depths identical to the first 3 position of the side bitting of the thin edge.

Side and edge tumblers are different types. Each type can be either a left or right format, referring to the side the spring tab is on relative to the tumbler contact protrusion.



DEPTHS

Side	Edge
1 - .140"	1 - .115
2 - .118	2 - .092
3 - .095	3 - .069
4 - .073	4 - .045
5 - .051	Incr. - .0232
Incr. - .0224	MACS - 2
Web - .035	
MACS - 2	

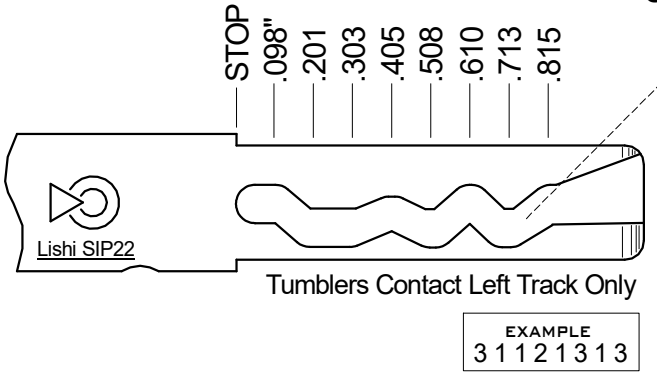


2004 - Greg N. Brandt, CML Rev. Mar '25

Sidewinder Key Bitting

FIAT / DODGE / JEEP
MASERATI / FERRARI / PIAGGIO

2025 Edition

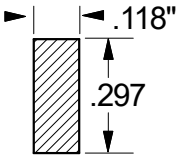


Uniform Width Groove
Approx. .100" *

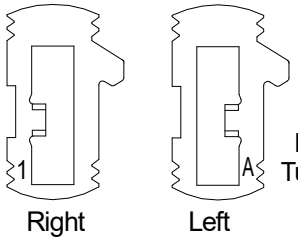
★ Code Series:
DE0001 - DE11210

Tumblers Contact Left Track Only

EXAMPLE
3 1 1 2 1 3 1 3



DEPTHS
(A) 1 - .166"
(B) 2 - .135
(C) 3 - .103
(D) 4 - .072
Incr. - .0315
Web - .024
MACS - 2

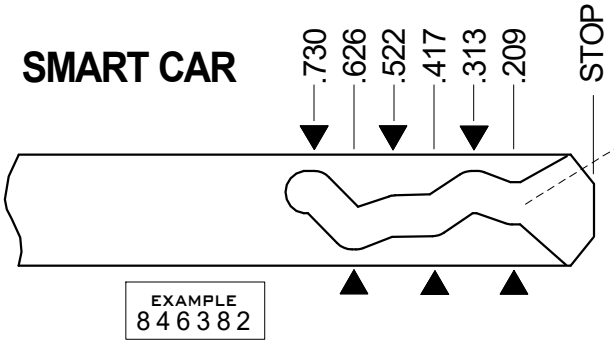


* The groove is not actually a uniform width. Factory keys are cut using a smaller diameter cutter, and opposing tracks are closer where the bitting is angled between adjacent cuts that differ in depth. This may create a problem with a 2.5mm tracer fitting between opposing tracks during duplication.

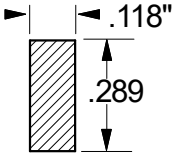
Locks contain both left and right format tumblers. In the door locks, right format tumblers are marked with the cut depth, but the left format tumblers are designated with a corresponding letter (A-D). If you need to remove tumblers from door / compartment locks, uncrimp the scalp of the core and remove the flat tumbler retainer located underneath.

The ignition lock is sidebar, other locks are not. They are a different form tumbler and are marked with an opposite scheme as the other locks. This means the left format tumblers have numbers, and the right have letters.

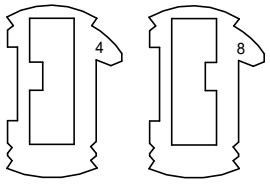
SMART CAR



Uniform Width Groove
.110"

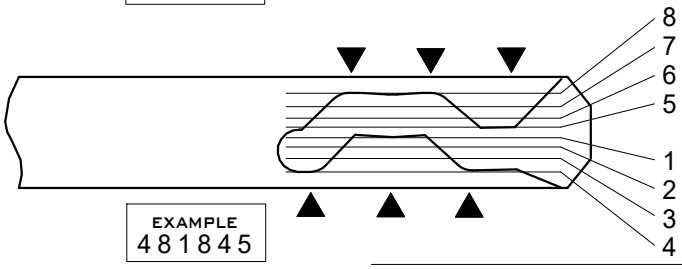


★ Code Series:
91000 - 95999



DEPTHS
1 / 5 - .131"
2 / 6 - .107
3 / 7 - .077
4 / 8 - .042
Web - .037
Variable Increment!
(.60, .75, .90 mm)

EXAMPLE
8 4 6 3 8 2



Cut depths 5 - 8 register on the left track

Cut depths 1 - 4 register on the right track

EXAMPLE
4 8 1 8 4 5

Tumblers can be either left or right format. Left format tumblers have the protrusion for contacting the key on the same side as the spring tab, and right format the opposite. The tumblers are stamped with numbers with the right format tumblers numbered 1, 2, 3 or 4, and the left numbered 5, 6, 7 or 8. Locks will contain a combination of both left and right format tumblers.

These keys are cut with a uniform width internal groove, and tumblers alternate contact of the left and right tracks. Two possible bitting formats are shown, but other bitting formats have been observed (e.g. L R L R R R). The pointers indicate tumbler contact on the left and right tracks in the examples.

The locks use a combination of left and right format tumblers which are turned in different directions. Tumblers in positions 1,2, 4 and 5 are biased opposite of tumblers in positions 3 and 6. The way a bitting is presented here requires that you account for the depth and which track each cut contacts.

For example, a #1 depth will be cut almost (but not exactly) the same as a #8 depth, with the difference being which track the tumbler registers on.

DECODING LOCKS: Orientation of the tumblers is unique. To fit a key from a lock, record the numbers stamped on each tumbler. Then convert the numbers in positions 3 and 6 to the complementary cut according to the depth scheme (e.g. change 1 to 5, 2 to 6, etc.).

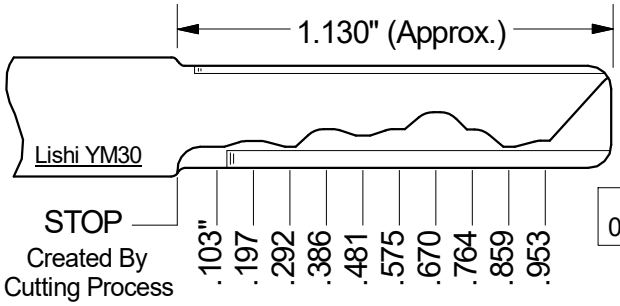
Therefore, a lock with tumblers stamped 3 8 5 8 4 2 (bow to tip), will convert to bitting 3 8 1 8 4 6. The way the bitting is represented here is contrived, as no factory bitting-from-code information is available at the time of this printing, nor is the full code range known.

It is very difficult to properly code original keys for this series without the use of computerized key machinery.

Sidewinder Key Bitting

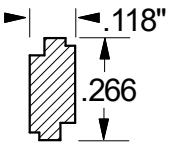
2025 Edition

SAAB 2-Track



EXAMPLE
0 1 0 3 2 3 6 3 0 1

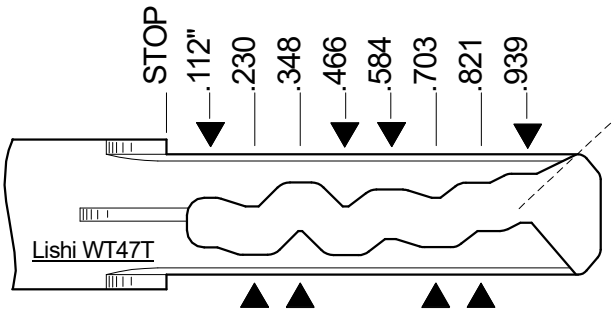
★ Code Series:
BC0001 - BC2865
2S0001 - 2S2675



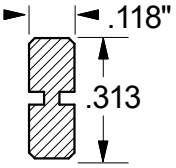
Odd positions use depths 0, 2, 4, 6 only
Even positions use depths 1, 3, 5, 7 only

DEPTHS
0 - .211"
1 - .196
2 - .180
3 - .165
4 - .150
5 - .135
6 - .120
7 - .104
Incr. - .0152
Web - .040
MACS - 3

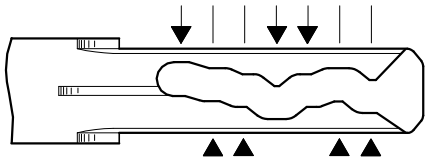
SAAB 4-Track '03+



Uniform Width Groove
.125"



★ Code Series:
DA 0001 - 2893 7-cut
DB 0001 - 4500 8-cut



7-Cut Key Tumbler Contact Positions
Used as a fob emergency key for the
9-3 Model Door Lock Only

DEPTHS
1 - .138" - (A)
2 - .116 - (B)
3 - .095 - (C)
4 - .073 - (D)
5 - .051 - (E)
Incr. - .0217
Web - .025
MACS - 3

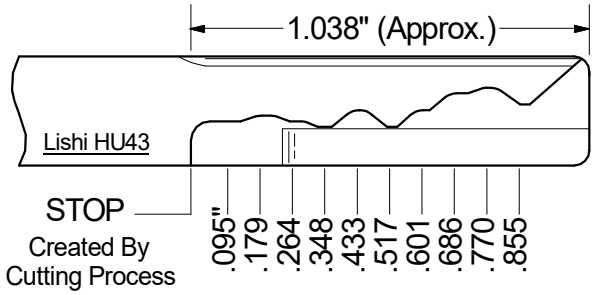
Unlike other sidewinder keys with a uniform width center groove, the tumblers in these locks alternate contact of the left and right track as indicated by the pointers. Opposing cut depths have an inverse relationship which renders a uniform width groove. When coding original keys, care must be taken to use proper cut root width and bitting angles to allow the tumbler protrusion height of .118" (3mm) to pass freely through the groove. Cars which use this as the emergency key within a fob key (the 9-3) have only the tip seven cuts and respectively the tumbler contact points are shifted one space toward the tip of the key.

The published codes reflect the bitting for the left track. The opposing right track depth for each position will always be 6 minus the left track depth. Tumblers are stamped with letters A through E which correspond to the depth of cut and track (left/right) which the tumbler contacts. For instance, if the first two positions are cut 2 1 (left track), then the first two cuts of the right track would be 4 5. The first two tumblers in the lock would be B E since with the first position the tumbler contacts the left track, and with the second position the tumbler contacts the right track. It is vital to understand this relationship when decoding a lock. The 8-cut key illustrated would correspond to a code bitting 2 1 4 1 3 2 4 5. The right track would be cut 4 5 2 5 3 4 2 1 and the lock combinated B E B A C D B E bow to tip.

Sidewinder Key Bitting

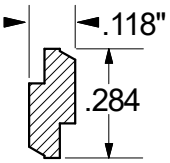
2025 Edition

PONTIAC GTO



★ Code Series:
H0001 - H3000

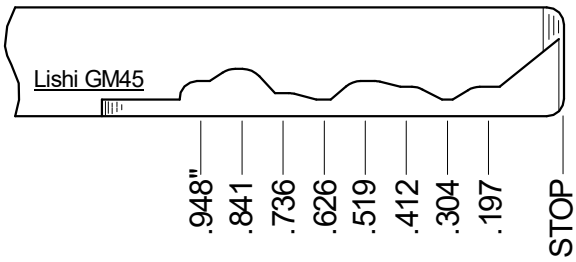
EXAMPLE
3 4 3 2 5 2 5 8 9 6



Odd positions use depths 1, 3, 5, 7, 9 only
Even positions use depths 2, 4, 6, 8 only

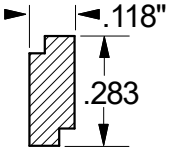
DEPTHS
1 - .198"
2 - .183
3 - .169
4 - .154
5 - .140
6 - .125
7 - .111
8 - .096
9 - .082
Incr. - .0146
Web - .040
MACS - 3

PONTIAC G8 / CHEVROLET Caprice 2011+



★ Code Series:
60000 - 62113

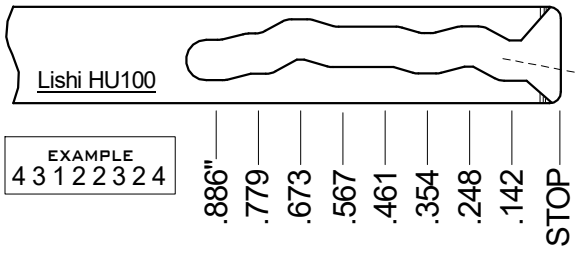
EXAMPLE
4 6 2 1 4 3 1 3



DEPTHS
1 - .239"
2 - .223
3 - .207
4 - .191
5 - .176
6 - .160
Incr. - .0157
Web .045
MACS - 4

GENERAL MOTORS 8-Cut 2008 +
SAAB 2008 +

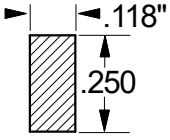
Tumblers contact the right track only



EXAMPLE
4 3 1 2 2 3 2 4

★ Code Series:
Z0001 - Z6000

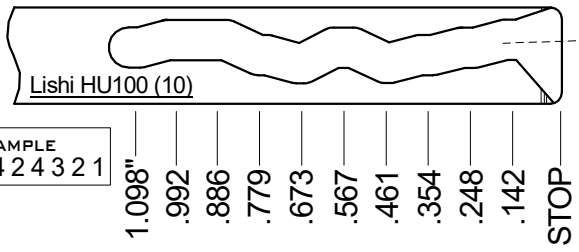
Uniform Width Groove
.104"



DEPTHS
1 - .113"
2 - .093
3 - .074
4 - .054
Incr. - .0197
Web - .028
MACS - None

GENERAL MOTORS 10-Cut 2014 + Trucks

Tumblers contact the right track only



EXAMPLE
2 1 1 3 4 2 4 3 2 1

Uniform Width Groove
.104"

★ Code Series:
V0001 - V5574

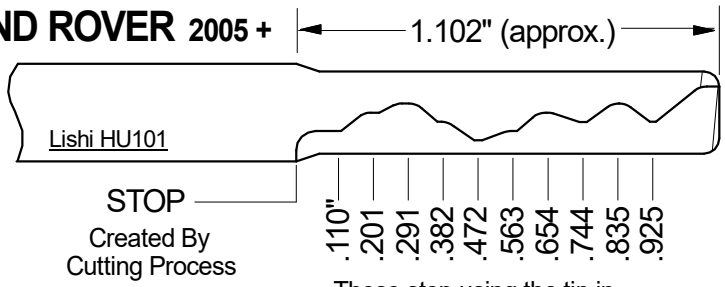
Positions 1 and 2 of the 10-cut key will always be the same as positions 9 and 10.

Sidewinder Key Bitting

2025 Edition

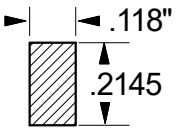
FORD 10-Cut 2011 +
JAGUAR 2007 +
VOLVO 2005 +
LAND ROVER 2005 +

★ Code Series:
10001 - 11500 Ford / Jaguar
0001 - 4000 Rover
4000 - 9000 Volvo



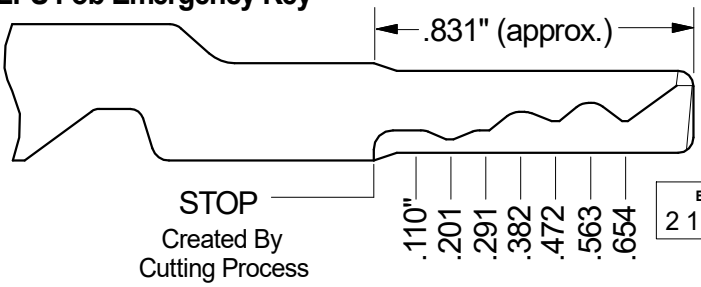
These stop using the tip in some compartment locks

EXAMPLE
2 4 5 3 1 2 4 3 5 3



DEPTHS
1 - .178"
2 - .154
3 - .131
4 - .107
5 - .084
Incr. - .0236
Web - .038
MACS - 2

FORD 7-Cut 2014 +
PEPS Fob Emergency Key



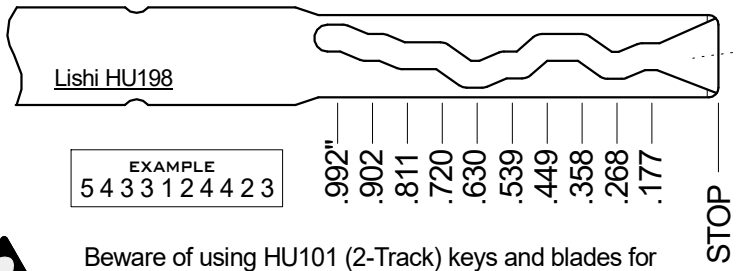
EXAMPLE
2 1 2 4 3 5 3

★ Code Series:
11501 - 13000

The 7-cut blade may present an issue with some duplicators, as tip gauging from the closet position of the key vise may not allow the widened portion of the blade to be outside the grip range. One tactic to facilitate duplication is the shim both the pattern key and blank slightly by the same distance back from the stop gauge.

FORD Internal Cut - 5 Depth
Introduced 2020

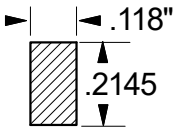
Tumblers contact the left track only



EXAMPLE
5 4 3 3 1 2 4 4 2 3

Uniform Width Groove
.070"

Must Use Small Diameter Cutter !



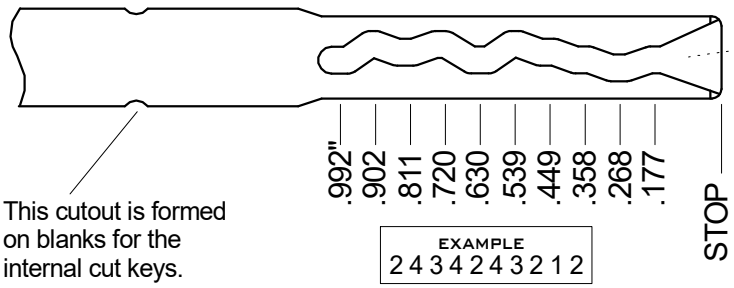
★ Code Series:
30001 - 31544

DEPTHS
1 - .121"
2 - .097
3 - .074
4 - .050
5 - .027
Incr. - .0236
Web - .032
MACS - 2

Beware of using HU101 (2-Track) keys and blades for these two keys. They have similar dimensions, but the tip is contoured differently which will affect key insertion.

FORD Internal Cut - 4 Depth (Truck)
Introduced 2021

Tumblers contact the left track only

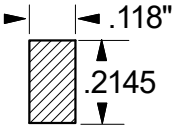


This cutout is formed on blanks for the internal cut keys.

EXAMPLE
2 4 3 4 2 4 3 2 1 2

Uniform Width Groove
.070"

Must Use Small Diameter Cutter !



★ Code Series:
P0004 - P9710

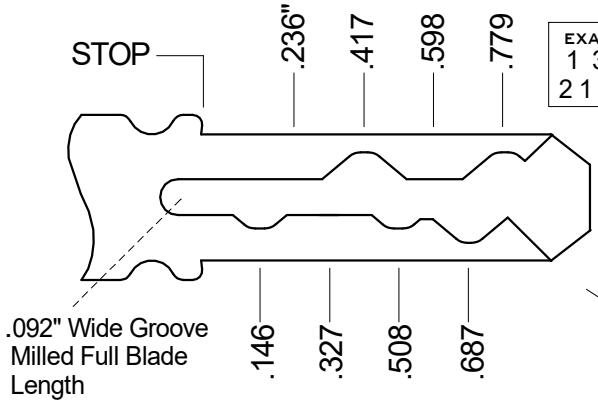
DEPTHS
1 - .097"
2 - .078
3 - .058
4 - .039
Incr. - .0197
Web - .032
MACS - 2

Sidewinder Key Bitting

2025 Edition

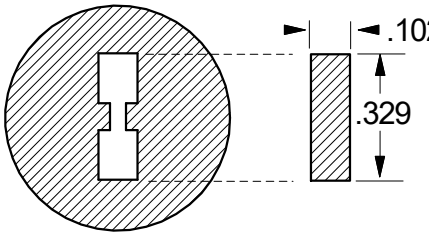
BMW MOTORCYCLE

★ Code Series:
K5001- K8276



NOTE: The BMW and Ducati, etc. lock formats are similar, with the same depths, cut-to-cut dimension, and bitting characteristics. However, the first tumbler location, bow-to-first-cut dimension, and number of tumblers are different.

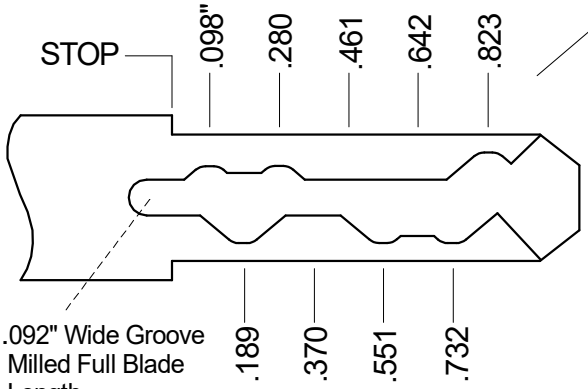
This key and the Ducati, etc key below require using a cutter smaller than the common 2.5 mm cutter which is used on most machines.



Keyway of Lock

DEPTHS
1 - .118"
2 - .083
3 - .047
Incr. - .0354
Web - .024
MACS - None

DUCATI / APRILIA / KTM
MV AGUSTA / MOTO GUZZI



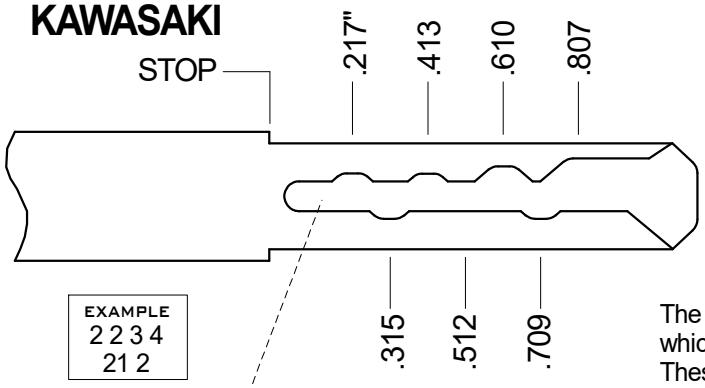
EXAMPLE
2 2 1 1 3
3 1 3 3

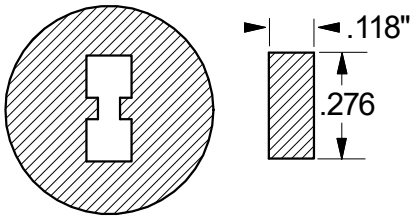
★ Code Series:
Z2001 - Z9416

NOTE: Factory keys are cut slightly different than other sidewinder keys in that they are not truly laser cut (steeples are not totally removed), and the bitting angle does not vary for different adjacent cuts. A groove must be milled straight down the center to bypass keyway warding as can be seen from the illustration. It is not necessary to cut keys exactly as the factory.

KAWASAKI

★ Code Series:
M7001 - M8000





Keyway of Lock

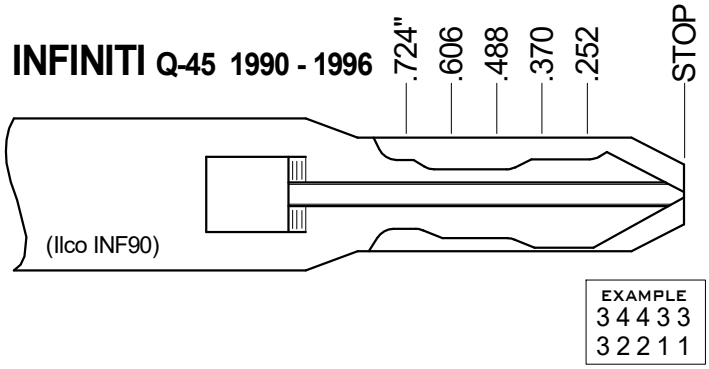
DEPTHS
1 - .098"
2 - .079
3 - .059
4 - .039
Incr. - .0197
Web - .027
MACS - None

The center keyway warding exists only in the ignition lock which requires the center groove to be milled in the key. These keys are bitted with steeples, which is important as certain key combinations would allow the key to be removed in the turned position if they were laser cut. There is an extra tumbler which contacts the edge of the key towards the very tip.

Sidewinder Key Bitting

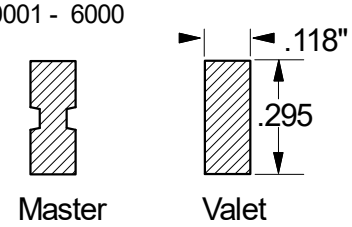
2025 Edition

INFINITI Q-45 1990 - 1996



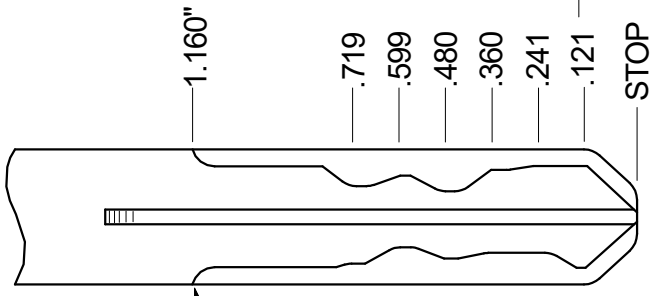
EXAMPLE
3 4 4 3 3
3 2 2 1 1

★ Code Series:
0001 - 6000



DEPTHS
1 - .286"
2 - .262
3 - .239
4 - .215
Incr. - .0236
Web - .040
MACS - 2

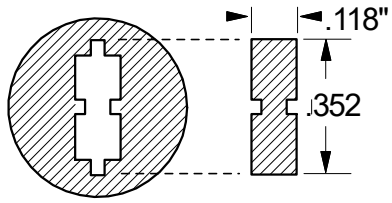
HONDA Motorcycle 2014 +



Though there is no tumbler in this position with the motorcycle locks, certain code combinations may list this position cut as a #2 depth. This occurs when the adjacent cut in the 5th position is a #6 depth and is done by necessity of MACS.

EXAMPLE
5 3 6 2 1
2 5 2 3 3

Key must be cut to #1 depth to this point in order to bypass keyway warding In the lock.



★ Code Series:
A, B 101 - 800

Motorcycle and Auto

DEPTHS
1 - .312"
2 - .298
3 - .283
4 - .269
5 - .255
6- .241
Incr. - .0142
Web - .035
MACS - 4

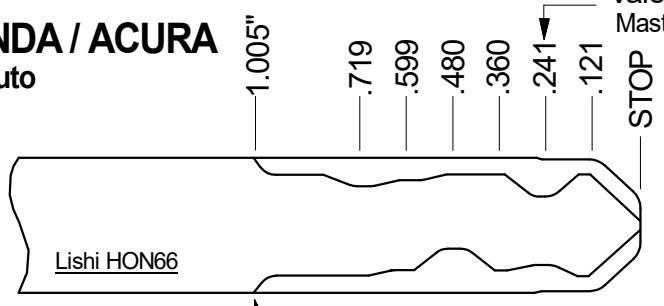
MOTORCYCLE and AUTO: The uncut center web of the key should be .035". If the web exceeds .040", the cut key will not enter the lock. Other than the center groove, the motorcycle series differs from the auto in a few ways: 1) The precut #1 depth must be milled farther from the tip in order to allow the key to enter the ignition lock completely. 2) The motorcycle locks use a full tumbler in the first position of all locks, as opposed to the auto locks which use a full tumbler in the 5th position of all locks. The motorcycle locks have split tumblers in the 5th position. 3) The rules for the 5th cut valet position (see below) do not apply to the motorcycle locks.

Some code publishers display the auto series as 5 spaces. The 6th space is always cut to a #1 depth on both tracks. Some compartment locks in the autos do contain a tumbler in the 6th position. There is no tumbler in the 6th position of the motorcycle locks. With the auto series only, the 5th position on the right track will only be a #3 or #5 depth.

HONDA / ACURA

Auto

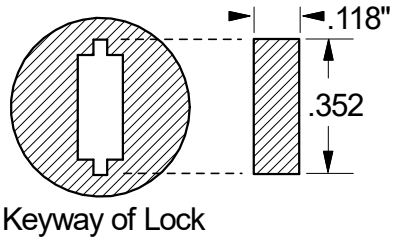
Valet Cut - Left Track
Master = 5 / Valet = 2



EXAMPLE
3 2 1 1 5
1 2 6 2 3

Key must be cut to #1 depth to this point in order to bypass keyway warding In the lock.

★ Code Series:
J, K, L, M 000 - 999

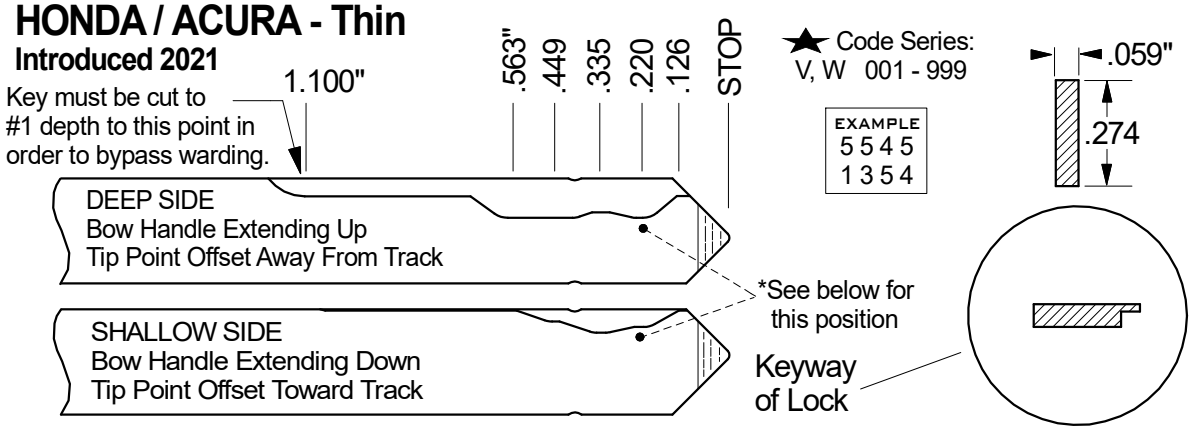


Sidewinder Key Bitting

2025 Edition

HONDA / ACURA - Thin

Introduced 2021



★ Code Series:
V, W 001 - 999

EXAMPLE
5 5 4 5
1 3 5 4

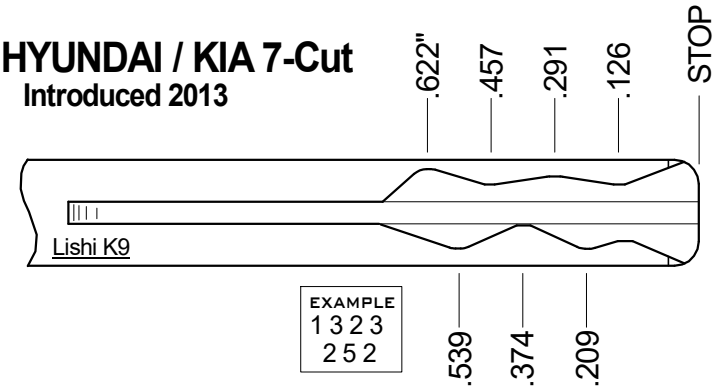
DEPTHS
Shallow Side
1 - .271"
2.- .257
3 - .242
4 - .228
5 - .214
6 - .200
Deep Side
1 - .228"
2.- .214
3 - .200
4 - .186
5 - .172
6 - .158
Incr. - .0142
Web - .019
MACS - 4

This non-reversible key is used only as a prox emergency key. Each side has its own cutting dimensions (labeled here as DEEP and SHALLOW) as the keyway is not centered in the plug, so a #1 depth on the deep side is approximately .028" offset from a #1 depth on the shallow side. Notice the tip is not centered. Original keys are stainless steel so beware of cutting, and special clamping or shimming will be necessary due to the thin web. These locks do contain a tumbler in the 5th position though it is not part of the code, but must be cut to a #1 depth.

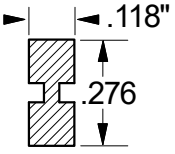
*The first three positions have split tumblers, the 4th position is a solid tumbler and the cut depth on the deep side will only be a #3 or #5 depth. The 4th postion on the shallow side is always cut to a #4 depth, though it does not contact the tumbler.

HYUNDAI / KIA 7-Cut

Introduced 2013

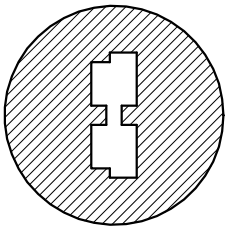


★ Code Series:
U0001 - U2500 Kia
I 0001 - I 2608 Hyundai
(code prefix is the letter "I")
X0001 - X2254



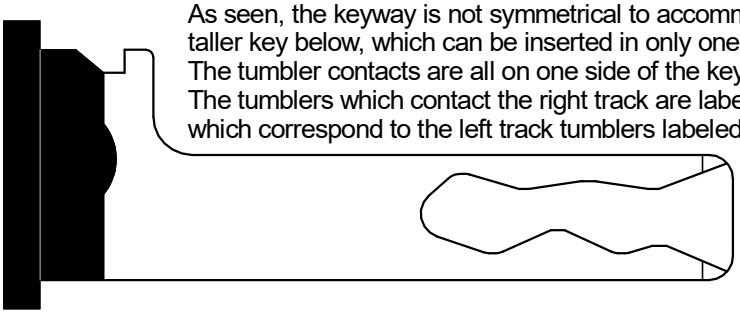
DEPTHS
(6) 1 - .024"
(7) 2.- .043
(8) 3 - .063
(9) 4 - .083
(0) 5 - .102
Incr. - .0197
Web - .040
MACS - None

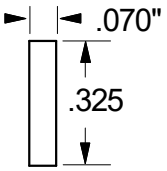
This lock is designed to accept either of these two key types. The key above fits a more conventional fob, and the key below slides into a thin prox card. The card key below is thinner and taller which is unusual. These keys are cut identically and either will work the lock, but each has it's own depth specifications because of the different blank dimensions.



Keyway of Lock

As seen, the keyway is not symmetrical to accommodate the taller key below, which can be inserted in only one direction. The tumbler contacts are all on one side of the keyway. The tumblers which contact the right track are labeled 6-0, which correspond to the left track tumblers labeled 1-5.





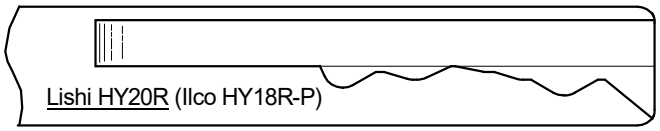
DEPTHS
1 - .049"
2.- .068
3 - .088
4 - .108
5 - .127
Web - .040

Sidewinder Key Bitting

2025 Edition

HYUNDAI / KIA 2-Track Right

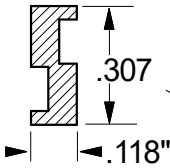
Introduced 2013



EXAMPLE
2 4 3 5 4 3 1 3

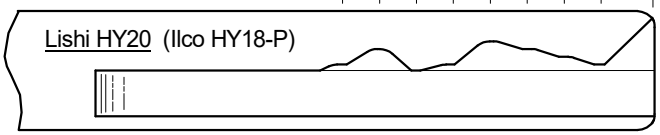
.799 .705 .610 .516 .421 .327 .232 .138 STOP

★ Code Series:
C1001 - C3500
(UM) M1001 - M3500



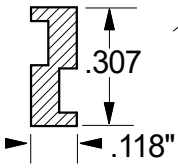
HYUNDAI / KIA 2-Track Left

Introduced 2012



EXAMPLE
4 2 5 4 1 2 3 4

★ Code Series:
T1001 - T3500
X1001 - X3500
TB1001 - TB3500

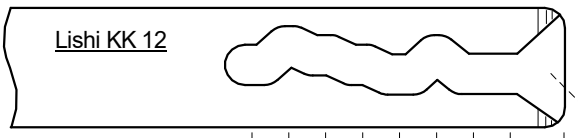


DEPTHS
1 - .078"
2 - .098
3 - .118
4 - .137
5 - .157
Incr. - .0197
Web - .028
MACS - 3

HYUNDAI / KIA Internal 8-Cut .6mm Increment

Introduced 2016

Tumblers contact the left track only

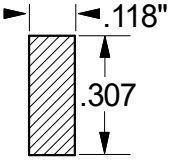


.799" .705 .610 .516 .421 .327 .232 .138 STOP

★ Code Series:
(KB) B0001 - B3000
(KD) D0001 - D3000
(HG) G0001 - G3000
(KC) C0001 - C2900

EXAMPLE
3 5 4 3 2 4 2 2

Uniform Width Groove
.104"



DEPTHS
1 - .142"
2 - .118
3 - .095
4 - .071
5 - .047
Incr. - .0236
Web - .028
MACS - 2

These two keys are cut on the same format blank (KK12) but have different bitting specifications. Be sure you select the proper specification for tracing and cutting.

HYUNDAI / KIA Internal 8-Cut .5 mm Increment

Introduced 2017

Tumblers contact the left track only

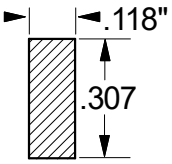
This key is essentialy the same as the HY18, but without the groove. Same bitting specifications and tumblers.

.799" .705 .610 .516 .421 .327 .232 .138 STOP

★ Code Series:
S0001 - S3000
CK0001 - CK2500
KA0001 - KA3000
(HC) H0001 - H2500

EXAMPLE
1 1 2 4 3 5 4 2

Uniform Width Groove
.104"

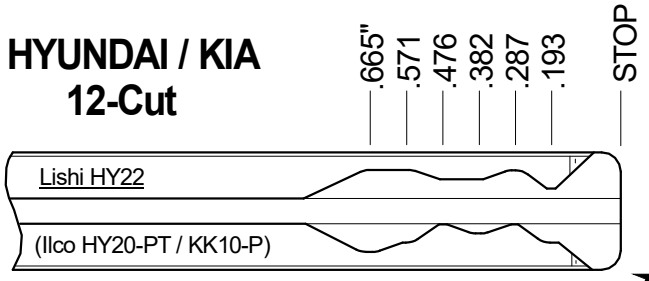


DEPTHS
1 - .078"
2 - .098
3 - .118
4 - .138
5 - .157
Incr. - .0197
Web - .028
MACS - 3

Sidewinder Key Bitting

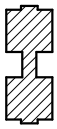
2025 Edition

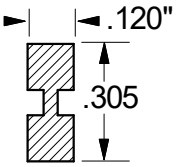
HYUNDAI / KIA 12-Cut



EXAMPLE
1 1 2 2 1 3
1 2 4 3 4 2

4-4 and 4-3 opposing cut combinations do not occur in the same position


Master



Valet

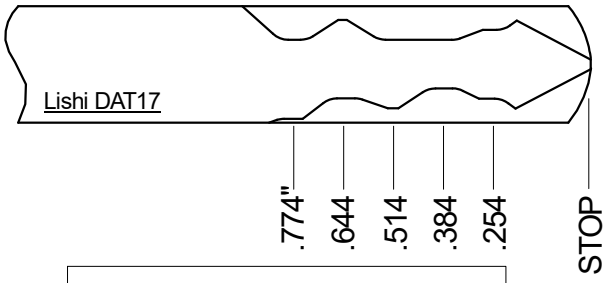
DEPTHS
1 - .047"
2 - .071
3 - .095
4 - .118
Incr. - .0236
Web - .040
MACS - 2

★ Code Series:
(KG) G0001 - G2500
J0001 - J2500
(HK) K0001 - K2500
(KE) E0001 - E2500

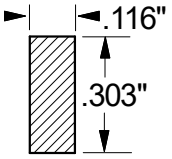
NOTE: The Lexus 16-cut format split tumblers can be used to combinate these locks. Use Lexus 2-5 for Hyundai / Kia 1-4.

SUBARU 4-Track Indroduced 2008

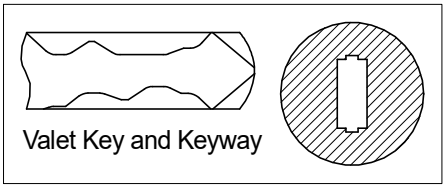
★ Code Series:
T0001 - T3000



EXAMPLE
4 2 4 4 3
1 3 2 4 3

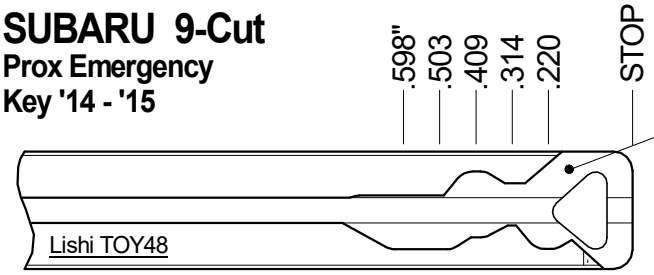


DEPTHS
1 - .292"
2 - .266
3 - .240
4 - .215
Incr. - .0256
Web - .037
MACS - 2



MASTER / VALET: Secondary locks have a keyway that is warded which prevents an uncut blank from entering. Valet keys are cut with a more obtuse tip angle which creates a section that is full blank height ahead of the 5th cut position. This prevents the valet key from entering. Because of the necessary bitting angle for valet keys, a number 4 cut depth is never used in the 5th position.

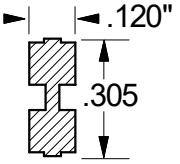
SUBARU 9-Cut
Prox Emergency Key '14 - '15



★ Code Series:
77000 - 78569

Cut Away This Position

EXAMPLE
5 5 1 3 *
1 1 3 5 1



DEPTHS
(1) 1 - .052"
(2) 3 - .082
(3) 5 - .113
Incr. - .0305
Web - .040
MACS - None

5-5 opposing cut combinations do not occur in the same postion

This is the same key format as Lexus 10-cut. The difference is the tip lead-in transitions to 4th position on the left track, and there is no cut in the 5th position on the left track.

These locks have a special tumbler in the 5th position of the left track which is at the shear line when at rest. If any key is inserted that is not cut away at this position, it will elevate this tumbler and prevent operation. This scheme effectively creates non-interchangeability between the Subaru and Lexus keys.

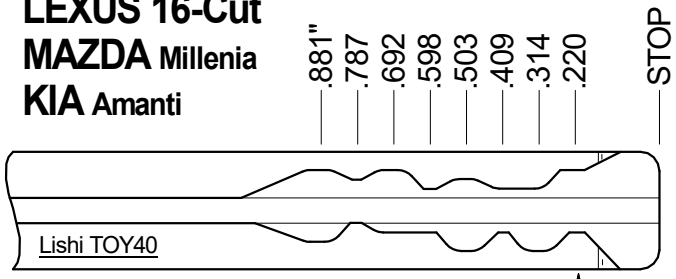
- Cutting Keys From Dealer Info -

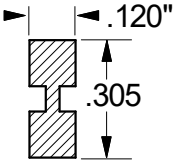
Dealer furnished codes will also list cut depths. It will be in the format of one string of numbers (ex.13211*2133). Factory depths of 1, 2, 3 must be transposed to 1, 3, 5 respectively. Cut depth positions 1-2-3-4-5-*-6-7-8-9 of the string are placed in the following format on the key:
Left Track - 9 8 7 6 * ("*" represents the vacant space)
Right Track - 5 4 3 2 1
Thus the first example 13211*2133 will translate to the illustrated key combination that is shown.

Sidewinder Key Bitting

2025 Edition

LEXUS 16-Cut
MAZDA Millenia
KIA Amanti





DEPTHS
1 - .024"
2 - .047
3 - .071
4 - .095
5 - .118
Incr. - .0236
Web - .040
MACS - 2
(except valet cut)

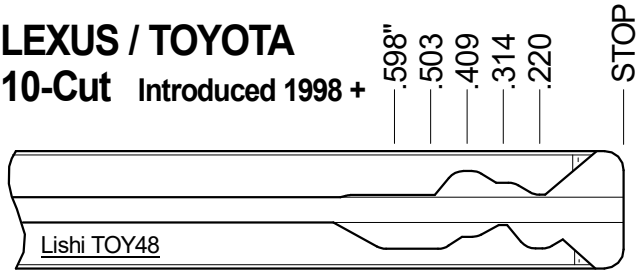
★ Code Series:
O0001 - O5000 Lexus
20001 - 22825 Mazda
L0001 - L1000 Kia

EXAMPLE
2 3 2 4 3 4 4 2
3 5 4 4 2 4 2 4

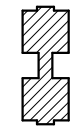
5-5 and 5-4 opposing cut combinations do not occur in the same postion

Valet Cut - Right Track
Master = 4
Valet = 2

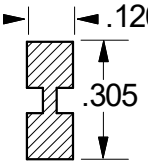
LEXUS / TOYOTA
10-Cut Introduced 1998 +



★ Code Series:
40000 - 49999



Master

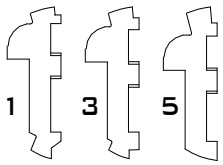


Valet

DEPTHS
(1) 1 - .052"
(2) 3 - .082
(3) 5 - .113
Incr. - .0305
Web - .040
MACS - None

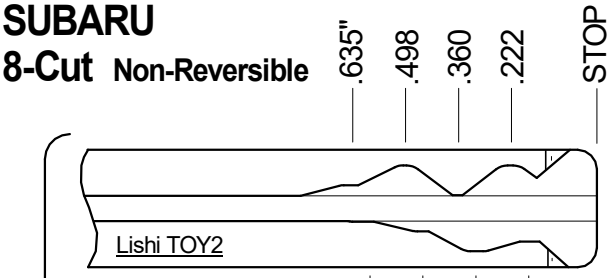
EXAMPLE
5 5 1 3 5
1 1 3 5 1

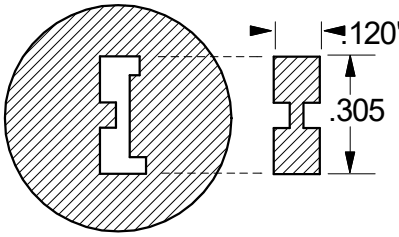
5-5 opposing cut combinations do not occur in the same postion



NOTE: Lexus 10-Cut tumblers are not stamped with numbers, but may be easily identified by sight. Compare the notch formation on the lower left of the illustration.

LEXUS / TOYOTA / SUBARU
8-Cut Non-Reversible





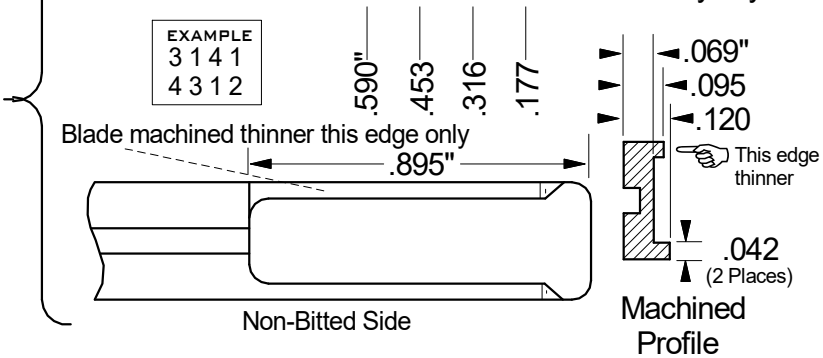
Keyway of Lock

Thin Version

DEPTHS
(I) 1 - .041"
(N) 2 - .069
(S) 3 - .092
(Y) 4 - .118
Incr. - .0256
Web - .030
MACS - None

★ Code Series:
80000 - 89999 Lexus / Toyota - thick and thin versions
90000 - 94999 Subaru - thin version only

EXAMPLE
3 1 4 1
4 3 1 2



This key is bitted on only one side, and is not reversible. Factory blanks come machined on the non-bitted side, but these can be made from the old style Lexus key by machining as indicated.The non-bitted side must be machined using two planes of cut depth as shown.

The web of the key is not centered exactly, due to the nature of the machining.The tumblers are stamped with letters which correspond to depths as indicated. The thin version is used on some later vehicles, and has no grooving on the non-bitted side.

Factory keys are cut with a smaller diameter cutter than the common 2.5mm. Certain combinations may be a challenge to duplicate, as a 2.5mm tracer may not pass between opposing tracks at some positions.

- Cutting Subaru Keys From Dealer Info -

Dealer furnished codes will also list cut depths. It will be in the format of one string of numbers (ex. 21341413). Cut depth positions 1-2-3-4-5-6-7-8 of the string are placed in the following format on the key:

Left Track - 8 7 6 5
Right Track - 4 3 2 1

Thus the first example 21341413 will translate to the illustrated key combination that is shown.